

CLAIMS

1. A system for treating metastases in a load bearing portion of a patient's body, comprising:

5 a structural support adapted to fit in an interstitial space in a load bearing portion of a patient's body and to structurally stabilize the load bearing portion, the structural support defining an internal space;

a radiation source positionable within the internal space for delivering radiation to tissue surrounding the interstitial space.

10 2. The system of claim 1, further comprising a shield, the shield being adapted to shield radiation sensitive tissue from a portion of the radiation.

15 3. The system of claim 1, wherein the structural support is configured to fit within a cavity in a patient's bone.

4. The system of claim 1, wherein the structural support is configured to fit within a cavity in a patient's spine.

20 5. The system of claim 4, wherein a portion of the structural support adapted to be positioned adjacent a patient's spine is formed from a radio-opaque material adapted to shield the patient's spinal cord from radiation.

25 6. The system of claim 1, wherein the radiation source is configured to provide an asymmetric radiation dose within the tissue surrounding the interstitial space so that radiation sensitive tissue surrounding the interstitial space receives a lesser dose.

7. The system of claim 1, wherein the structural support and the radiation source are adapted so that the radiation source is positioned at a predetermined distance apart from tissue

surrounding the cavity so as to provide a prescribed absorbed dose of radiation to the surrounding tissue to a predetermined depth.

8. A method for treating metastases in a patient's spine, comprising:

5 placing a structural support within an interstitial space in the spine to provide structural support therein;

placing a radiation source within the structural support; and

providing a controlled dose of radiation to tissue surrounding the structural support.

10 9. The method of claim 8, further comprising surgically resecting a vertebral body to at least partially create an interstitial space.

10. The method of claim 8, wherein a radiation shield is provided, the shield being adapted to shield radiation sensitive tissue from a portion of the radiation.

15 11. The method of claim 10, wherein a portion of the structural support is formed from a radio-opaque material adapted to shield the patient's spinal cord from radiation.

20 12. The method of claim 8, wherein the radiation source is configured to provide an asymmetric radiation dose within the tissue surrounding the interstitial space so that radiation sensitive tissue surrounding the interstitial space receives a lesser dose.

25 13. The method of claim 8, wherein the radiation source is positioned so as to provide a prescribed absorbed dose of radiation to tissue surrounding the cavity to a predetermined depth.

14. The method of claim 8, wherein the radiation source comprises at least one solid radiation source disposed on at least one elongate member.

30 15. The method of claim 8, wherein a plurality of solid radiation sources are disposed in a spaced apart relationship on a single elongate member.